

Serial No.: 10/680,540

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Original) An apparatus comprising:

a drill string having a working end comprising at least one of drilling means for drilling a subterranean borehole and pullback means for pulling an object through a subterranean borehole;

a measurement system suitable for measuring at least one operational characteristic of at least one of said drilling means and said pullback means, said measurement system comprising a metallic section in direct contact with said drill string;

at least one toroid circumferentially disposed around a first portion of said metallic section and having toroidal electrically conductive windings; and

a non-conductive material disposed around said toroid whereby contact between said toroid and a subterranean environment during operation of said apparatus is precluded.

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2. (Original) An apparatus in accordance with Claim 1, wherein a second portion of said metallic section is exposed whereby contact between said second portion and said subterranean environment during said operation of said apparatus is enabled.

3. (Original) An apparatus in accordance with Claim 1, wherein said measurement system comprises a tension measurement means connected to said working end of said drill string.

4. (Original) An apparatus in accordance with Claim 1, wherein said measurement system is disposed within a drill head connected to said working end of said drill string.

5. (Original) An apparatus in accordance with Claim 1, wherein said measurement system comprises at least one of temperature means for measuring temperature within said subterranean borehole and pressure means for measuring pressure within said subterranean borehole.

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6. (Original) An apparatus in accordance with Claim 1, wherein said drill string is adapted for at least one of horizontal drilling and horizontal pullback.

7. (Currently amended) An apparatus comprising:
at least one of a metallic pipe and a metallic rod suitable for at least one of drilling a subterranean borehole and pulling an object through a subterranean borehole; and

a transmitter in direct metallic contact with said at least one of said metallic pipe and said metallic rod;

a measurement system suitable for measuring at least one operational characteristic of at least one of said drilling and said pulling disposed within said transmitter, said measurement system comprising a metallic section in direct contact with said at least one direct metallic contact; and

said transmitter comprising a toroid disposed circumferentially around at least a portion of ~~said at least one of said metallic pipe and said metallic rod~~ metallic section and having toroidal electrically conductive windings, and at least one non-conductive material disposed around said toroid, whereby contact between said toroid and a an environment surrounding ~~environment~~ said transmitter is precluded.

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8. (Canceled)

9. (Original) An apparatus in accordance with Claim 7 further comprising a data receiver operably connected to one of said metallic pipe and said metallic rod, whereby said one of said metallic pipe and said metallic rod is a conduit for transmission of data between said transmitter and said data receiver.

10. (Currently amended) An apparatus in accordance with Claim ~~8~~7, wherein said measurement system comprises a tension measurement device, said tension measurement device being disposed between and connected to said at least one of said metallic pipe and said metallic rod and said object.

Claims 11-18 (Canceled)